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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/559,501

03/24/2006

Stephen Bailey

JMYS-137US

8704

23122 7590 09/30/2008  
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EXAMINER

SHUMATE, ANTHONY R

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

09/30/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,501	<b>Applicant(s)</b> BAILEY ET AL.	
	<b>Examiner</b> ANTHONY SHUMATE	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005 and 24 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5 December 2005</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Summary***

1. This is the initial Office action based on the 10/559,501 application filed 24 March 2006.
2. The preliminary amendment filed 5 December 2005 has been entered and fully considered.
3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
4. Claims 1-23 are pending and have been fully considered.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3, 5-8, 12, 13 and 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by YAMAGUCHI et al. (US 6,228,800 B1).

For instant claim 1, YAMAGUCHI teaches at abstract, column 1 lines 10-15, column 6 lines 40-65 and column 8 lines 49-60 catalyst suitable which consists essentially of a palladium compound supported upon a support material (carrier) selected from the group consisting of magnesia, alumina, silica -alumina, and silica-alumina-magnesia and a compound of a lanthanide (Cerium (Ce)) .

For reference only, instant claim 2 was previously cancelled.

For instant claim 3, YAMAGUCHI teaches at column 6 lines 40-65 wherein the support comprises alumina.

For instant claim 5, YAMAGUCHI teaches at column 6 line 59 – column 7 line 25 wherein the catalyst is in the form of shaped particles having a dimension (diameter) of 3 mm which is within the claimed range of a minimum dimension greater than 1 mm, thereby anticipating the claimed range. (MPEP 2131.02 PART I)

For instant claim 6 and 7, YAMAGUCHI teaches at column 6 lines 40-65 wherein the lanthanide compound is a compound of cerium (Ce) or lanthanum (La).

For instant claim 8, YAMAGUCHI teaches at column 12 lines 40-50 that the amount of palladium supported is not critical; however, it is usually 0.1 to 20% by weight which overlaps the claimed range of palladium present at a level in the range of about 50 ppm to about 1% by weight calculated as Pd metal and the weight of the total catalyst. (MPEP 2131.02 PART II)

For reference only, instant claim 11 was previously cancelled.

For instant claim 12, YAMAGUCHI teaches at column 13 lines 22-60 a process comprising the step of passing a mixture of a gaseous feed containing said hydrogenatable organic compound and hydrogen over a catalyst (partial hydrogenation of acetylenes to olefins). Also, YAMAGUCHI teaches at abstract, column 1 lines 10-15, column 6 lines 40-65 and column 8 lines 49-60 catalyst suitable which consists essentially of a palladium compound supported upon a support material (carrier) selected from the group consisting of magnesia, alumina, silica -alumina<sub>2</sub> and silica-alumina-magnesia and a compound of a lanthanide (Cerium (Ce)) .

For instant claim 13, YAMAGUCHI teaches at column 13 lines 22-60 wherein said hydrogenatable organic compound comprises an acetylenic compound (acetylenes).

For reference only, instant claim 16 was previously cancelled.

For instant claim 17, YAMAGUCHI teaches at column 6 lines 40-65 wherein the support comprises alumina.

Art Unit: 1797

For instant claim 18, YAMAGUCHI teaches at column 6 line 59 – column 7 line 25 wherein the catalyst is in the form of shaped particles having a dimension (diameter) of 3 mm which is within the claimed range of a minimum dimension greater than 1 mm, thereby anticipating the claimed range. (MPEP 2131.02 PART I)

For instant claim 19 and 20, YAMAGUCHI teaches at column 6 lines 40-65 wherein the lanthanide compound is a compound of cerium (Ce) or lanthanum (La).

For instant claim 21, YAMAGUCHI teaches at column 12 lines 40-50 that the amount of palladium supported is not critical; however, it is usually 0.1 to 20% by weight which overlaps the claimed range of palladium is present at a level in the range of about 50 ppm to about 1% by weight calculated as Pd metal and the weight of the total catalyst.

7. Claims 1, 10, 12 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by BOGDAN (US 6,013,173).

For instant claim 1, BOGDAN teaches at abstract and column 3 lines 35-66 a catalyst which consists essentially of a palladium compound supported upon a support material selected from the group consisting of titania, magnesia, alumina, or silica-alumina and a compound of a lanthanide.

For instant claim 10, BOGDAN teaches at column 8 lines 25-40 and column 5 lines 10-30 the atomic ratio of Pd (palladium) to lanthanide metal is in the range of at least 1.3:1 (1:0.77) which encompasses the claimed range of 1:0.5-1:3.5, thereby anticipating the claimed range. (MPEP 2131.02 PART II)

For instant claim 12, BOGDAN teaches at abstract, column 1 lines 1-67 and column 3 lines 35-66 a process for the hydrogenation of a hydrogenatable organic compound comprising the step of passing a mixture of a gaseous feed containing said hydrogenatable organic compound and hydrogen over a catalysts which consists essentially of a palladium compound supported upon a support material selected from the group consisting of titania, magnesia, alumina, or silica-alumina and a compound of a lanthanide.

For instant claim 23, BOGDAN teaches at column 8 lines 25-40 and column 5 lines 10-30 the atomic ratio of Pd (palladium) to lanthanide metal is in the range of at least 1.3:1 (1:0.77) which encompasses the claimed range of 1:0.5-1:3.5, thereby anticipating the claimed range. (MPEP 2131.02 PART II)

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1797

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over YAMAGUCHI et al. (US 6,228,800 B1) in view of WRIGHT et al. (US 3,549,720).

For instant claim 4, YAMAGUCHI teaches at column 13 lines 22-60 a use for his compound partial hydrogenation of acetylenes to olefins. Also, YAMAGUCHI teaches at abstract, column 1 lines 10-15, column 6 lines 40-65 and column 8 lines 49-60 catalyst suitable which consists essentially of a palladium compound supported upon a support material (carrier) selected from the group consisting of magnesia, alumina, silica -alumina<sub>1</sub> and silica-alumina-magnesia.

For instant claim 4, WRIGHT teaches at abstract a compound which is similar to that claimed and YAMAGUCHI et al. teaches in that it is made of palladium and alumina. Also, WRIGHT teaches at abstract that the catalyst is for a similar use as claimed and YAMAGUCHI et al. teaches in that the use is for hydrogenation of acetylenes in a gas stream containing olefins. Furthermore, WRIGHT teaches at column 2 lines 15-35, that the taught catalysts' majority quantity of pore diameter is smaller than 800 angstroms (0.08 microns which overlaps the claimed range of wherein the mean pore diameter lies within the range 0.05-1 micron, thereby causing the claimed range to be obvious.

For instant claim 4, WRIGHT also teaches at column 1 line 60 – 70 and column 2 lines 15-22, that large quantities of alumina are used as supports for

Art Unit: 1797

noble metal hydrogenation catalysts, particularly as supports for palladium catalysts. However, it is now recognized that physical properties of the various aluminas, such as surface area, pore size or pore size distribution and the like, should fall within narrow ranges for various reactions. For example, when selectively treating a particular size range molecule it is often advantageous to have a particular alumina pore size.

For instant claim 4, one of ordinary skill in the pertinent art at the time of invention would have been motivated to modify the invention of YAMAGUCHI with the pore diameter technique taught by WRIGHT et al. to provide the predictable result of a superior catalyst in the hydrogenation of acetylenes in a gas stream containing olefins.

For instant claim 14 and 15, WRIGHT et al. teaches at table 1 and column 3 lines 25-75 a gaseous feed stream contains a minor proportion (0.244%) of an acetylenic (acetylene  $C_2H_2$ ) compound and a major proportion (39.3%) of an olefinic compound (ethylene  $C_2H_4$ ), in addition to hydrogen ( $H_2$ ).

For instant claim 14 and 15, it would have been obvious for one of ordinary skill in the pertinent art at the time of invention to combine the process elements for hydrogenation of acetylenes to olefins taught by WRIGHT et al. and claimed at 14 and 15 with the partial hydrogenation of acetylenes to olefins process taught by YAMAGUCHI at column 13 lines 25-60 by known methods and that in combination, each element merely would have performed the same

Art Unit: 1797

function as it did separately. One of ordinary skill in the art would have recognized that the results of the combination were predictable because WRIGHT et al. uses a similar process and catalyst as YAMAGUCHI does. (KSR International Co. v. Teleflex Inc., 550 U.S. \_\_\_, 82 USPQ2d 1385, 1395-97 (2007))

10. Claims 9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over BOGDAN (US 6,013,173).

For instant claim 9 and 22, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have wherein the lanthanide compound is present at a concentration of 50-5000 ppmw based on the lanthanide metal and the weight of the total catalyst. BOGDAN teaches at column 8 lines 25-40 wherein the lanthanide compound is present at a concentration of about 0.05 to about 5 based on the lanthanide metal and the weight of the total catalyst. Also, BOGDAN teaches at column 1 lines 1-26, that his invention is suitable for hydrogenation which is similar to the use of the present invention as presented at instant claim 1 and 12. Since, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2144.05 PART II)

### **Conclusion**

Art Unit: 1797

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY SHUMATE whose telephone number is (571)270-5546. The examiner can normally be reached on M-Th 9-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571)272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Duane S. Smith/  
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9-26-08

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